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AUTHOR Mann, Jay
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ABSTRACT

This symposium paper describes 2 experiments in which the principles of observational learning were applied in school settings to the treatment of 2 separate groups of test-anxious junior high school students. The first experiment was designed to test the assumption that the counter-conditioning responses thought to occur in systematic desensitization of avoidance behavior could be acquired vicariously. The 2nd was designed to permit evaluation of the effects of expectations for benefit and diverse observational styles exhibited by observer subjects. Results included: (1) experimentals achieved a substantial and highly significant decrease in reported test anxiety; the control group increased slightly in anxiety; (2) neither vicarious nor direct treatment, group or individual, or any combination of these treatments produced differential change; and (3) observation of desensitization, using either live or videotaped stimuli, appears to offer an economical and efficient method of treating test anxiety in the school setting. (TA)

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SYMPOSIUM PAPER

APPLYING OBSERVATIONAL LEARNING TO STUDENT PROBLEMS, SUCH AS EXAMINATION ANXIETY, IN SCHOOL SETTINGS[1]

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Jay Mann
Veterans Administration Hospital
Palo Alto, California

The speakers who preceded me have dealt with some of the broader aspects of observational learning. Now, I would like to describe two experiments in which the principles of observational learning were applied in school settings to the treatment of two separate groups of test-anxious junior high school students. A report of the first study has been published (Mann & Rosenthal, 1969), and a report of the second study will appear soon (Mann, in press). Two handouts are available: one covers the text of my present remarks; the second is a preprint of the article describing the second study.

The first experiment was designed to test the assumption that the counter-conditioning responses thought to occur in systematic desensitization of avoidance behavior (Davison, 1968) could be acquired vicariously, that is, through observation of the treatment procedure as well as through direct participation in treatment. This assumption was based on recent evidence demonstrating comparable effects, such as vicarious aversive conditioning (Bandura & Rosenthal, 1966) and vicarious extinction of avoidance behavior through symbolic modeling with dog- and snake-phobic Ss (Bandura, Grusec, & Menlove, 1967; Bandura & Menlove, 1968; Bandura, Blanchard, & Ritter, 1970). Three principal considerations led to the

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selection of test-anxiety as the target behavior. First, numerous researchers had reported that direct application of variants of Wolpe's (1958) systematic desensitization procedure had proven effective in eliminating or reducing test-anxiety (Emery & Krumboltz, 1967; Katahn Strenger & Cherry, 1968; Kondas, 1967; Mitchell & Ingham, 1970; Suinn, 1968). These results contrasted favorably with the marginal and conditional results reported by earlier investigators using insight-oriented or counseling procedures (see Chestnut, 1965; Mann, 1960). Secondly, because of the pervasiveness of test anxiety, it was considered important to devise observational treatment methods that could be applied to sizable groups with minimal expenditure of school professionals' time. Finally, desensitization which utilizes imaginal stimuli, was considered the method of choice, because the test-anxious individual primarily emits covert avoidance responses rather than observable behaviors susceptible to extinction by modeling of competing approach responses -- the method used to treat animal avoidance behaviors. A detailed discussion of the theoretical rationale for the procedure may be found in the original report (Mann, 1970).

Experiment 1

Method

A group of seventh- and eighth-grade students referred by school counselors because of test anxiety were administered an assessment battery consisting of an adaptation of the Test Anxiety Scale, which is a self-report inventory of test anxiety developed by Emery & Krumboltz (1967), and the Speed and Comprehension Subtest of one form of the Gates McGinnitie Reading Test, which was used to obtain a pretreatment measure of a scholastic skill presumed to be inhibited by test anxiety (Emery & Krumboltz, 1967).

The 50 Ss who scored highest on the Test Anxiety Scale were ranked according to their initial test-anxiety scores and were then assigned by stratified random sampling (to approximately equalize group means) to one of the following five treatment conditions: (a) individual direct desensitization; (b) individual vicarious desensitization; (c) group direct desensitization; (d) vicarious group desensitization, observing direct desensitization of a group; and (e) vicarious group desensitization, observing direct desensitization of a peer model. Within each of the five treatment conditions, half the Ss were assigned to the author for treatment; the other half were assigned to a female graduate student, differing greatly from the author in age and personal characteristics. Twenty-one Ss were assigned to a no-treatment control group.

In individual conditions, one direct S was observed by one vicarious S at each treatment session. In group conditions, five-member groups observed either another five-member group or a peer model at each treatment session. Direct Ss were first taught exercises designed to induce deep muscle relaxation, after which they were exposed to a 10-item test-anxiety hierarchy developed by Emery and Krumboltz (1967). Observer Ss, seated so that they could see and hear the procedures, were encouraged to learn as much as they could, but were not instructed to imitate the model, to follow the therapist's directions to the model, nor to practice at home. However, some observer Ss did report that they had voluntarily executed one or more of these procedures.

Individual direct Ss controlled the rate of exposure to imaginal stimuli by signalling whenever they felt a noticeable increase in anxiety. Group rates were similarly controlled by signals from any direct group member. Observer Ss exercised no overt control over rate of exposure. Completion of the procedure required eight fifty-minute sessions

Results

Correlated *t*-tests of pre- and posttreatment scores for experimental and control *Ss* considered separately indicated that experimentals had achieved a substantial and highly significant decrease in reported test anxiety; in contrast, the control *Ss* had increased slightly in anxiety. On the reading measure, the experimentals improved, but not significantly; the controls, however, decreased significantly. This decrement may have resulted from the effects upon arousal-level of the encroaching stress of school final exams (Rosenthal, 1966), from disparity between the presumably equivalent forms of the reading test, or from a combination of factors that would have been expected to affect both the experimental and control groups to a comparable extent.

One-way analyses of variance comparing controls with pooled experimentals revealed that relative to controls, experimental *Ss* had achieved significantly greater improvement in reading.

Differential effects of the several treatment variations were then compared by means of analyses of variance. No significant main effects nor interactions were found. Therefore it was concluded that neither vicarious as compared to direct treatment, group as compared to individual treatment, nor any combination of these conditions had produced differential change. However, as has been noted, all treatment variations, relative to no treatment, resulted in significant improvements on both test-anxiety level and reading proficiency.

Experiment 2

Since the design of the previous experiment had not permitted evaluation of the effects of (a) expectations for benefit and (b) diverse observational styles exhibited by observer *Ss*, a second experiment was performed to test these two

treatment components. In addition, the second experiment provided a replication of the vicarious desensitization technique with a second sample and a test of the effectiveness of videotaped, rather than live, presentation of the desensitization procedure.

Method

Eighty seventh- and eighth-grade students, equated for demographic variables, grade, and sex by grade, were selected from an initial pool of 110 students referred by counselors in a California junior high school because of reported anxiety associated with school tests. The students selected were those who scored highest on an initial administration of the Test Anxiety Scale. Ss had also completed one form of the reading test used in the previous experiment.

After testing, ten males and ten females were assigned by stratified random sampling to one of three experimental groups. Each group was to observe videotapes depicting the systematic desensitization of a test-anxious peer model under one of the following conditions: (1) instructions to observers to imitate all modelled responses and to follow all therapist instructions; (2) instructions to observe, but not to imitate, the procedure; (3) instructions to observe a modified procedure from which relaxation exercises had been omitted. Thus the extent to which treatment effectiveness was influenced by (a) imitation, (b) observation of paired relaxation and presentation, and (c) observation of stimulus presentation only could be compared. Within each of these conditions, one subgroup of ten Ss was given instructions designed to maximize expectations for benefit from treatment; the other ten Ss were given instructions designed to engender only moderate expectations. An additional 20 Ss (ten of each sex) were assigned to a waiting list control group.

Experimental Ss participated in six semi-weekly 45-minute sessions of viewing the therapeutic videotapes during school hours. They and the control Ss were then retested on the Test Anxiety Scale and an equivalent form of the reading test. After second testing, waiting list control Ss were treated with the procedure involving imitation. All Ss were then retested for the third time with the Test Anxiety Scale and a third form of the reading test. This testing constituted a followup testing for the previously treated experimentals and a posttreatment testing for the former controls.

Results

Experimental Ss demonstrated substantial and significant reductions of reported anxiety immediately following treatment and additional reductions at followup. Controls demonstrated no significant reduction prior to treatment but following treatment reached reduced levels of anxiety essentially equivalent to the final levels attained by the experimental Ss who had been treated earlier. At second testing, comparison of change scores indicated that, relative to untreated controls, treated experimentals had achieved significant reductions in anxiety. Results on the second administration of the reading test were somewhat anomalous. Experimental Ss declined to a slight and non-significant extent, while untreated controls demonstrated significant and substantial decrements. Since these results parallel the results of Experiment 1, it appears reasonable to assume that the second form of the reading test was more difficult for the present samples than was the first. Comparison of pooled experimental and control change scores on this measure showed that, relative to experimentals, control Ss declined to a highly significant extent, a result supporting the effectiveness of the treatment in reducing experimental Ss' anxiety. At third testing, following treatment of former controls, both groups of Ss showed significant, and substantially equivalent,

improvement in reading proficiency over their pre-experimental level. Analyses of variance applied to the several experimental conditions indicated that neither procedural variations nor differences in expectancy instructions had contributed differentially to the gains made by pooled experimental Ss relative to untreated controls.

Results in both experiments were substantially equivalent. Both the live and videotaped procedures appeared to produce significant improvement in both anxiety level and reading proficiency, as compared to no-treatment. The failure of procedural variations to differentially influence change in either study can be explained by reference to the previously reported finding that basically robust treatment techniques may mask minor effects produced by variations in procedure (Bandura, Blanchard, and Ritter, 1970).

On the strength of the present results, observation of desensitization, using either live or videotaped stimuli, appears to offer an economical and efficient method of treating test anxiety in the school setting.

Results for Experiment 1

Table 1. Initial Means, Mean Changes, and Correlated t-Tests of Pre- and Post-treatment Test Anxiety and Reading Scores for Experimental and Control Ss

Group	Variable					
	Test Anxiety			Reading		
	Initial mean	Mean Change	t	Initial mean	Mean Change	t
Pooled experimental Ss (N = 50)	53.38	-16.08	7.26**	36.28	1.92	NS
Control Ss (N = 21)	43.52	1.33	NS	39.67	-5.29	5.29*

* .05 level of probability
** .001 level of probability

Table 2. Analysis of Variance for Experimental and Control Groups' Test Anxiety Change

Source	MS	df	F	p
Total	301.3521	70		
Groups	4484.3012	1	18.623	.0002
Error	240.7207	69		

Table 3. Analysis of Variance for Experimental and Control Groups' Reading Change

Source	MS	df	F	p
Total	89.9330	70		
Groups	986.0963	1	12.815	.0010
Error	76.9502	69		

Note: Detailed results for Experiment 2 are contained in second handout.

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